Performance task

**Goal:**You must convince the Board of Directors of the new city amusement park to buy your roller coaster design.

**Role:**You are part of a roller coaster design team.   
**Audience:**

The Board of Directors at ―Islands of Fun" amusement park  
**Situation**:

The ―Islands of Fun‖ amusement park wants to add a new roller coaster ride. Your job is to work together as a team to design a roller coaster and present your coaster design to the Board of Directors at ―Islands of Fun".   
**Products:**

Materials needed: (6 feet of 7/8-inch (inner diameter) foam pipe insulation [cut in half lengthwise], standard-size marble, masking tape [not duct tape], stop watch, flexible metric tape measure, balance) to **construct a roller coaster** with at least two “hills”. Conduct trials to be sure that the marble performs as planned. Once the roller coaster is performing acceptably, calculate the speed of the marble from start to finish for three trials. Find the **average speed** of the marble for the three trials. Create a **diagram** of the roller coaster with labels and short explanations to show which parts demonstrate the following terms: speed or friction, gravity, potential energy, kinetic energy, The diagram should include a data table for time and distance and the calculations for speed. Possible alternative methods of design could include the use of their own materials that could include decoration.

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|  | 4 | 3 | 2 | 1 |
| Roller coaster | Roller coaster uses only approved materials and has three consecutive successful trials in which the marble stays on the track. | Roller coaster uses only approved materials but has only two consecutive successful trials in which the marble stays on the track. | Roller coaster uses only approved materials but has less than two consecutive successful trials in which the marble stays on the track. | Roller coaster does not use specified materials. |
| Diagram | Diagram includes terms provided, correctly placed, with a short explanation for each, a data table with time and distance from three trials, the calculation of average speed, and the calculation of work done by the marble. | Diagram includes data table with time and distance from three trials, the calculation of average speed, and the calculation of work done by the marble but lacks in the proper placement or explanation of terms provided. | Diagram includes data table with time and distance from three trials, the calculation of average speed, and the calculation of work done by the marble but lacks provided terminology | Diagram lacks a data table with time and distance from three trials, the calculation of average speed, and the calculation of work done by the marble. |
| Presentation | Presentation includes a demonstration of the working roller coaster, the name of the roller coaster, justification of the design used in each part of the coaster, identification and explanation of the chosen terms, the average speed of the marble for the three trials, and the work done by the marble | Presentation includes a demonstration of the working roller coaster, justification of the design used in each part of the coaster, identification and explanation of the chosen terms but lacks in one of the following criteria’s: the average speed of the marble for the three trials, the work done by the marble, or name of the roller coaster | Presentation includes a demonstration of the working roller coaster, a justification of the design used in each part of the coaster, but lacks in more than one of the following criteria’s: identification and explanation of the chosen terms, the average speed of the marble for the three trials, the work done by the marble or name of the roller coaster | Presentation includes a demonstration of the working roller coaster |